The effects of gestational diabetes on the mother & fetus

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Maternal complications

- Medical complications
- Complications at delivery
- Increased risk of overt diabetes

Maternal complications

- More likely to develop hypertensive disorders in pregnancy
- Some of this increased risk is due to the underlying risk factors for GDM
  - Obesity
  - Advanced maternal age
- Even without GDM, women with “carbohydrate intolerance” have higher rates of pre-eclampsia

Hypertensive disorders

- 15-20% of patients with GDM develop pre-eclampsia as compared with 5-7% of patients who do not have GDM
- Probably a result of insulin resistance and genetic predisposition

Delivery

- Timing
- Route
- Need for ante partum testing

Operative deliveries

- Higher rates of operative vaginal deliveries
- Higher rates of c-section even when the fetus is not macrosomic
  - The effect of the diagnosis on practitioners' practices

Development of long term diabetes

- What test is used?
- What is the duration of follow up?
- Other characteristics of the population
  - Ethnicity
  - Weight

Development of overt diabetes

- O’Sullivan followed patients for up to 28 years
- 20% of GDM patients developed overt diabetes
- 50% developed carbohydrate intolerance
- 7% of controls developed overt diabetes

Factors that impact the development of overt diabetes

- How abnormal was the GTT?
- Is the patient obese?
- What was the gestational age at diagnosis?
- How abnormal was the postpartum screen?

Neonatal complications

- Preterm birth
- Macrosomia & birth injury
- Hypoglycemia
- Hypocalcemia
- Polycythemia
  - hyperbilirubinemia
- Long term neurological outcome
- Risk of developing obesity, diabetes or both

Macrosomia

- Definition
  - Greater than 4500 grams
  - Caution with weights >4000 g
  - Caution with operative vaginal deliveries
    - midpelvic operative vaginal deliveries
    - prolonged second stage
- Not all macrosomia is due to excess glucose
- ? Preventable

Is macrosomia preventable?

- Prophylactic insulin has reduced risks
  - Macrosomia
  - Operative deliveries
- Would treat 100% of patients to benefit 9-40%
- ? If early 3rd trimester ultrasound can identify a group of patients who would benefit from insulin

Can you predict shoulder dystocia?

- **An ultrasound is not a scale!**
- A policy of elective c-section to avoid a shoulder dystocia is effective only if fetal weight can be accurately predicted
- Ultrasound is a poor predictor of fetal weight in macrosomic fetuses
- Ultrasound is +/- 10% in the best circumstances
- Some studies suggest an error rate of 15-20%
- In order not to miss one case of a fetus >4250 grams by ultrasound you would have to do a c-section on all fetus weighing 3500 grams
- 50% of women with GDM would be sectioned

Long term neurological outcome

- Some studies have suggested poorer long term outcome in a fetus whose mother had GDM

- Avoid ketosis

Long term risk of obesity or diabetes in the fetus

- Clearly a risk for developing one or both
- Weight often normalizes after delivery
- Weight begins to increase age 5

One value abnormal but not GDM

- May be even more of a risk
- 3X rate of macrosomia
- 5X the rate of neonatal morbidity